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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,325	03/06/2002	Yasuaki Tanaka	991186A	7967

38834 7590 12/07/2004

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EXAMINER	
NGUYEN, HUNG	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/091,325	TANAKA ET AL.	
	Examiner	Art Unit	
	Hung Henry V Nguyen	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *62-84* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *62-76 and 78-83* is/are rejected.

7)☒ Claim(s) *77 and 84* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2002* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/421,331.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 62-76, 78-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al (U.S.Pat. 5,898,477) in view of Takahashi et al (U.S.Pat. 5,892,573).

With regard to claims 62-76 and 78-83, Yoshimura et al (fig.1) discloses an exposure apparatus and method for transferring a pattern formed a reticle onto a sensitive substrate comprising steps of measuring the variation in a transmittance of the optical system/the intensity profiled of illuminating light by measuring the transmittance of the optical system through the projection lens (10) before a pattern formed on the reticle being transferred to the substrate and measuring the illuminating light passing through the projection lens during the exposure via illuminance monitors (A#12 and B#15). Yoshimura further teaches a first sensor (12) disposed in the illuminating optical system for detecting the amount of the illuminating light and a second sensor (15) placed in the image plane for measuring the amount of the illuminating light passing through the projection lens. (see fig.1) and the light source for illumination the reticle is an excimer laser (a wavelength of 250nm or less) (see col.6, line 17); a memory (202) for storing the measured light amount. Also, Yoshimura teaches a main control system (104) for calculating

a desired exposure amount on the substrate based on the data obtained by illuminance monitors (A#12 and B#15) ; and the substrate is then exposed with the desired exposure amount (see col.5, lines 23 to col.6, lines 13). Yoshimura does not expressly disclose calculating the desired exposure on the substrate, in consideration of the information relating to the variation in intensity of illumination light and the information relating to the distribution of illumination. Takahashi el al discloses an exposure apparatus and teaches to calculate a coefficient in variation based on the output signals from the first and second light quantity detectors (see col.5, lines 62 through col. 6, line 5; formulas: 1-4 of Takahashi) and calculating the desired exposure on the substrate, in consideration of the information relating to the variation in intensity of illumination light and the information relating to the distribution of illumination (see col.7, lines 5-15; col.8, lines 17-31; col.9, lines 26-47 and equations (1) and (2). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Yoshimura and Takahashi to obtain the invention as specified in the above mentioned claims. Given the output signals of detectors (12, 15) of Yoshimura, it would have been obvious to one having ordinary skill in the art of mathematics to compute the desired exposure on the substrate, in consideration of the information relating to the variation in intensity of illumination light and the information relating to the distribution of illumination as taught by Takahashi whereby the desired exposure amount is properly determined and thus the quality of the images to be printed in greatly improved.

Allowable Subject Matter

3. Claims 77 and 84 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: while the prior art of record discloses aperture diaphragm for determining the size of shape of the illumination light and it is well known in the art that when σ value of illumination is changed, or oblique illumination is to be performed the aperture diaphragm can be replaced. But the prior art does not specifically teach illumination of the mask under special conditions as recited in claims 86-89 of the instant invention.

Response to Amendment

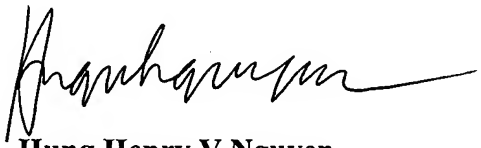
5. Applicant's amendments filed June 6, 2002 have been entered. New claims 62-84 have been added. Applicant's argument with respect to the prior art have been carefully considered but they are not found persuasive and have been rejected as set forth above. In response to applicant's argument that the applied references fail to suggest utilizing both information relating to variation in intensity of an illumination light on an exposure region on a substrate and information relating a distribution of illuminance in the exposure region to compute a desired exposure light amount on the substrate"; the Examiner respectfully disagrees with the application. For instance, Takahashi meets the limitations as claimed since Takahashi teaches the output signal S1 of the first detector 12 is measured and is used to computed the light quantity E upon the wafer W surface and is given as E=gS1. Furthermore, the output signals S1

and S2 of the first and second detectors (12, 13) are applied to the light quantity calculating means (102) to compute the light quantity on the wafer W (see col.9, lines 34-45 and col.10, lines 1-35) and "correct measurement of light quantity on the wafer W surface is used to correct the exposure amount (see col.13, lines 34-35).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hung Henry V Nguyen
Primary Examiner
Art Unit 2851

hvn
12/4/04